

**ABSTRACT OF THE DISCLOSURE**

A phase-locked loop frequency synthesizer has a charge pump, phase-locked loop filter, voltage-controlled oscillator, and a bandwidth calibration circuit. The bandwidth calibration circuit measures the gain of the voltage-controlled oscillator and  
5 uses the measured voltage-controlled oscillator gain to adjust the charge pump level. The charge pump level is adjusted so that a product of the voltage-controlled oscillator gain and the measured charge pump level results in a constant phase-locked loop bandwidth.